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SOURCE Sel'khozmaschinaUSSR STRESSES DEVELOPMENT OF NEW FARM MACHINES, IMPROVED PRODUCTION METHODS[Numbers in parentheses refer to appended sources.]Ask Improved Design Work

During the 19th Party Congress, certain goals stressing the mechanization of agriculture were set for 1955.

In that year it is expected that 80-90 percent of grain and sunflower harvesting will be done by combines; 90-95 percent of sugar-beet harvesting will be mechanized; 60-70 percent of the cotton crop will be picked by cotton picking machines; 55-60 percent of the planting, cultivating and harvesting of the potato crop will be done mechanically; and 70-80 percent of ensilaging will be mechanized.

To achieve this goal the designers of the GSKBs (State Special Design Bureaus), of the SKBs (Special Design Bureaus) of plants, and of VISKhom (All-Union Scientific Research Institute of Agricultural Machine Building) must, in 1953 and 1954, complete the designs of machines which are not yet ready for production. Designs that must be completed include machines for mowing, transporting, and stacking of hay; machines for gathering stalks after combine harvesting; grain cleaners and dryers; attachments to combines for sunflower harvesting; loaders and cleaners for sugar beets; cotton pickers and cotton cleaners; potato planters and combines; and many others.

Work on these machines must be given first priority. The best designers must be mobilized for the job. The work must be supervised by technicians of the Ministry of Agricultural Machine Building.

Design bureaus must change their work methods completely. Designers must no longer design machines without considering their durability. The designs must be checked and tested before they are put into production. The power

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characteristics of the basic units of a new machine should be determined on the first experimental model, as is done by the design bureaus at the Rostsel'mash, Rostov-on-Don Krasnyy Aksay, and Kirovograd Krasnaya Zvezda plants, and the Lyubertsy Plant imeni Ukhtomskiy.

Standardization, unification, and normalization of machine parts, the most undeveloped phase of agricultural machine building, should be given more attention.

Between 1952 and 1955, the agricultural machine building industry will organize the output of approximately 100 new machines. In addition, the industry will produce general purpose parts, such as 38- and 30-millimeter-pitch drive chains, which can be widely used on a number of machines.

Basic and responsible decisions which will have a bearing on the quality of a machine must originate with the designer. This has not always been the case. Slipshod work has been permitted in working out technical documentation for the SKhM-48M and SKhP-2.1 cotton pickers, the UPKh-1.5 cotton cleaner, and several other machines designed by GSKB designers.

In past years, a number of experimental machines acquired a low rating because they constantly required minor repairs and adjustments. These minor shortcomings resulted from the fact that the plant was not given enough time to study all parts of the machines and to make corrections in their design before they were built.(1)

Mechanize Agricultural Machine Building Processes

Agricultural machine building plants responded to the greatly increased demand for agricultural machines during the postwar period by improving their production organization, mechanizing labor consuming and heavy work, and introducing modern processes and methods.

Mechanization of the basic processes in the foundry, from sand preparation to cleaning finished castings, is as high as 80-90 percent at agricultural machine building plants. Complex mechanization has been carried out in the foundries of the Belinsk'sel'mash Plant, the Lyubertsy Plant imeni Ukhtomskiy, the Rostsel'mash Plant, the Rostov-on-Don Krasnyy Aksay Plant, and others. Modified cast iron is used widely, and annealing time for malleable iron has been reduced to 70 hours at a number of plants. The Lyubertsy Plant imeni Ukhtomskiy, the Khar'kov Serp i Molot Plant, the Rubtsovsk Altaysel'mash Plant, and others use shot blast equipment for cleaning castings. The Odessa Plant imeni Oktyabr'skaya Revolyutsiya, and the Kar'kov Serp i Molot Plant make cores on sand-blowing machines. The Kirovograd Krasnaya Zvezda Plant, the Taganrog Combine Plant, the Odessa Plant imeni Oktyabr'skaya Revolyutsiya, and the Lyubertsy Plant imeni Ukhtomskiy are organizing the production of castings made of high-strength iron.

New methods of utilizing lathes and drilling machines have improved the quality of farm machines and effected large savings in money, in addition to reducing the time spent on machine parts requiring high labor consumption. The 16-25-28-spindle, 1A725-726-727-728 horizontal drilling machines are now used to drill holes in frames for P5-35M plows. The new method has freed 16 universal machine tools at each plow building plant.

At the Taganrog Combine Plant, use of two T 1A 28j six-spindle automatic vertical lathes, a 52-spindle drilling machine, and a 14-spindle thread cutting machine for machining hubs (32 lathe operations, drilling and countersinking 22 holes, and threading 14 holes) cut down the number of workers and machine tools in this section to one third of those formerly required for the task.

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A number of plants have set up constant-flow lines, made up of special and unit-type machine tools, for machining mower and reaper frames, bearing housings, combine housings and hubs, plow frame parts, and parts of the U5-M combine engine.

At the Kar'kov Serp i Molot Plant, a new automatic transfer machine line for machining cylinder heads of the U5-M combine engine has been put into operation.

A great number of metal cutting machine tools have been converted to high-speed methods at agricultural machine building plants. In recent years, type 1730 and 1261 multitool semiautomatic lathes, and vertical six-spindle semiautomatics have been widely used for machining step shafts, hubs, flanges, and gears.

Despite the many improvements, the time consumed in the production of agricultural machines is still very great. In many plants 40-45 percent of all work is done by hand labor. The reason for this large percentage of hand labor is the unsatisfactory organization of production, incorrect assignment of workers, existence of much unnecessary work in adjusting and finishing various parts during the assembly of machines, and failure to make full use of special machines.

In 1952 a number of plants suffered considerable losses due to rejects. This was especially noticeable in metal casting. The largest percentages of gray iron casting rejects were at the Rostov-on-Don Krasnyy Aksay Plant, the Akmolinsk Kazakhskel'mash Plant, and the Taganrog Combine Plant. The largest percentages of malleable iron casting rejects were at the Belinskskel'mash Plant and the Akmolinsk Kazakhskel'mash Plant. The Chirchikskel'mash Plant had the largest percentage of rejects in steel castings.

The Rubtsovsk Altaysel'mash Plant, the Odessa Plant imeni Oktyabr'skaya Revolyutsiya, the Ryazskel'mash Plant, and the Novaya Tule Combine Plant use electric contact equipment to heat workpieces before bending operations. The Rubtsovsk Altaysel'mash Plant has made widest use of electric contact heating and has set up a number of original automatic and semiautomatic units for heating blanks used in upsetting bolt heads. The plant also has an electric contact heating unit on the plow frame line in the machinery assembly shop.

The Lyubertsy Plant imeni Ukhtomskiy, the Taganrog Combine Plant, and the Khar'kov Serp i Molot Plant have set up units for gas casehardening of combine and engine gears.

In 1953, the Rubtsovsk Altaysel'mash Plant should set up automatic lines for the production of chisel-shaped plowshares and moldboards; the Kirovograd Krasnaya Zvezda Plant, the Lyubertsy Plant imeni Ukhtomskiy, and the Taganrog Combine Plant should set up groups of automatic equipment for making bolts and nuts; and the Pervomaysk Plant should set up an automatic line for the production of rake teeth, install instruments for the automatic control of thermal processes in heating ovens, and build instruments for counting finished parts.(2)

Expand Number of Farm Machine Designs

In 1937, the output of newly designed tractor-drawn agricultural machines was 91.1 percent of the total agricultural machine output. By 1939, this figure had been raised to 96 percent.

During the earlier [presumably prewar] five-year plans, agricultural machine building plants turned out more than half a million tractor plows, more than a million tractor and horse-drawn seeders, about 200,000 combines, and hundreds of millions of rubles worth of other machinery.

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In 1940, there were 84 designs of agricultural machines in production; in 1946, 90; in 1947, 119; in 1948, 162; in 1949, 195; and in 1950, 212.(3)

Develop Harvesting Machines

During 1953, the Agricultural Machine Building Industry will produce a large quantity of harvesting machines. Production of trailer combines, self-propelled mowers, self-propelled combines, flax harvesting combines, hemp harvesting machines, flax pulling and threshing machines, universal cotton cleaners, and improved cotton picking machines has increased already.

This year the Gomsel'mash Plant and the Frunze Plant imeni Frunze are starting series production of hay stackers for the first time.

One of the most important post-harvesting processes is grain drying. This process is especially important in the central, northern, and eastern oblasts, in the Urals, and in the northern part of Kazakhstan. To meet this problem, the Gomsel'mash Plant has increased the output of stationary grain dryers. Other plants have increased the output of mobile grain dryers. The Voronezhskel'mash Plant has started to put out the improved OS-2 grain cleaner.

During the 1953 harvesting season, a number of new machines will be submitted for testing. Among them will be an 8-meter self-propelled combine, an electric combine, and a two-row potato combine. Also due for testing are: a combine for harvesting bast crops, a soybean and rice harvesting combine, a 15-cubic-meter-capacity stacker to be used with the Stalinets-6 combine, attachments for self-propelled combines for harvesting down stalks of grain crops and sunflowers, grain cleaning and drying machines with mechanized loading and unloading equipment, a semi-self-propelled seven-bar 14-meter mower for the DT-54 tractor, a self-propelled elevator and hay stacker, a silo blower, and others.

Although production of spare parts for agricultural machines has increased, many plants are still behind in their schedules. The Rostsel'mash Plant is behind in production of spare parts for combines and self-propelled mowers, the Lyubertsy Plant imeni Ukhtomskiy is behind in production of spare parts for horse-drawn grain harvesters and flax harvesters, the Taganrog and Krasnoyarsk combine plants are behind in the production of spare parts for self-propelled combines, and the Tashsel'mash Plant is behind in making spare parts for cotton pickers.

The Frunze Plant imeni Frunze, the Bezhetsk'sel'mash Plant, and some others have not caught up with unfulfilled quotas for spare parts assigned during the past months.(4)

SOURCES

1. Moscow, Sel'khoz mashina, No 2, Feb-53
2. Ibid., No 3, Mar 53
3. Ibid., No 4, Apr 53
4. Ibid., No 6, Jun 53

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